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Human Immunodeficiency Virus (HIV) Viral Suppression After Transition From Having No Healthcare Coverage and Relying on Ryan White HIV/AIDS Program Support to Medicaid or Private Health Insurance

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Among 1942 persons with human immunodeficiency virus (HIV) without healthcare coverage in 2012–2015, transitioning to Medicaid (adjusted prevalence ratio, 0.95 [0.87, 1.04]) or to private health insurance (1.04 [0.95, 1.13]) was not associated with a change in consistent HIV viral suppression compared to continued reliance on the Ryan White HIV/AIDS Program.

Keywords. Affordable Care Act; insurance; Medicaid; HIV viral suppression; HIV.

The Ryan White HIV/AIDS Program (RWHAP) helps more than 500 000 low-income persons with human immunodeficiency virus (HIV, PWH) obtain access to HIV-related medical services, including outpatient visits, diagnostic testing, medications, and adherence counseling, and to support services, including transportation to visits and case management [1]. For low-income PWH who have no healthcare coverage, the RWHAP provides full support for these services. For low-income PWH who have healthcare coverage, the RWHAP provides assistance with co-pays and cost-sharing after other resources are used and continues full assistance for services not included in coverage plans.

Implementation of the Affordable Care Act in 2014 brought new access to healthcare coverage for many uncovered PWH who had relied on the RWHAP for full assistance with

medical and support services (hereafter referred to as uncovered, RWHAP-supported PWH). In Medicaid expansion states, many transitioned to Medicaid [2]. In all states, some may have transitioned to private insurance through a health insurance marketplace or through gaining employment-based coverage. In each case of transition, PWH remained eligible for RWHAP assistance if their income remained below the qualifying threshold.

Compared to being uncovered with RWHAP support, Medicaid or private insurance may be associated with potential facilitators of HIV care, such as preferred providers and coverage for non-HIV-related care, and with potential barriers, including availability of referral requirements, prior authorizations, and drug formulary changes. It is possible that ongoing RWHAP assistance to these individuals may not have overcome potential barriers. We investigated whether HIV viral suppression changed among PWH who transitioned from being uncovered, RWHAP-supported to Medicaid or to private health insurance in 2014.

METHODS

Study Population

We used data from the HIV Research Network cohort, which includes 12 adult HIV care sites [3]. We excluded 7 sites that lacked healthcare coverage data and an 8th site because it had no uncovered patients. This yielded 4 urban, clinical sites, with 2 in Medicaid expansion states and 2 in nonexpansion states. Each site receives RWHAP funding to support all PWH with incomes below the locally applicable threshold (400%–500% of the federal poverty limit).

We included adults aged 18–65 years who were engaged in care in each calendar year from 2012 to 2015 and who were uncovered, RWHAP-supported in 2013. We defined engagement in care as having at least 1 HIV provider visit, 1 CD4 measurement, and 1 HIV viral load measurement each year. We excluded patients who had Medicare at any point, given the expectation that Medicare coverage, once initiated, will remain lifelong.

Exposure

The exposure of interest was change in healthcare coverage in 2014. We categorized healthcare coverage status based on the primary form of coverage billed at the final HIV provider visit of 2014 (uncovered, RWHAP-supported, Medicaid, or private insurance). We excluded those who changed their form of coverage in 2015 to ensure that the outcome, measured in 2015, would be preceded by exposure to only a single healthcare coverage category. The RWHAP encourages eligible low-income PWH to enroll in private

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insurance (marketplace or employment based) and assists these individuals in paying the premiums. We classified such cases as private insurance.

Outcome

Our primary outcome was consistent viral suppression in 2015, defined as having all HIV viral load measurements within the calendar year ≤ 200 copies per milliliter. Because of an expected lag for any effect of healthcare coverage on viral suppression, we observed this outcome for 2015 but not 2014.

Analysis

We first conducted χ^2 tests comparing 2012 patient characteristics and 2013 and 2015 viral suppression by 2014–2015 insurance status. Second, we estimated adjusted prevalence ratios (aPR) and 95% confidence intervals (CIs) for viral suppression in 2015 using a Poisson regression model with robust variance to approximate a log-binomial regression model with $\alpha = 0.05$ [4, 5]. Because we expected prior HIV viral suppression to be associated with current suppression, we also controlled for consistent viral suppression in 2013 (when all patients were uncovered, RWHAP-supported) and for demographics, primary HIV acquisition risk, and care site. We conducted a secondary analysis stratified by state Medicaid expansion status.

RESULTS

Of 1942 patients who were uncovered, RWHAP-supported in 2013, 1432 (73.7%) remained uncovered, RWHAP-supported, 362 (18.6%) transitioned to Medicaid, and 148 (7.6%) transitioned to private insurance in 2014 (Supplementary Table S1).

Of 177 patients who lived in Medicaid expansion states, 97 (54.8%) transitioned from uncovered, RWHAP-supported status to Medicaid, and 26 (14.7%) transitioned to private insurance. Of 1765 patients living in nonexpansion states, 265 (15.0%) transitioned to Medicaid and 122 (6.9%) transitioned to private insurance (Supplementary Tables S2 and S3).

In 2013, 74.4% of uncovered, RWHAP-supported PWH who later continued with this status had consistent viral suppression throughout the year. In comparison, 64.4% of uncovered, RWHAP-supported PWH who later transitioned to Medicaid and 83.1% of those who later transitioned to private insurance had consistent viral suppression (Figure 1, blue bars; P values $< .01$; Supplementary Table S4). In 2015, each group exhibited relatively little change from its 2013 baseline; 74.9% of patients who continued to be uncovered, RWHAP-supported in 2014–2015 had consistent viral suppression in 2015; 66.6% of patients who transitioned to Medicaid were consistently suppressed in 2015; and 79.1% of patients who transitioned to private insurance were consistently suppressed in 2015.

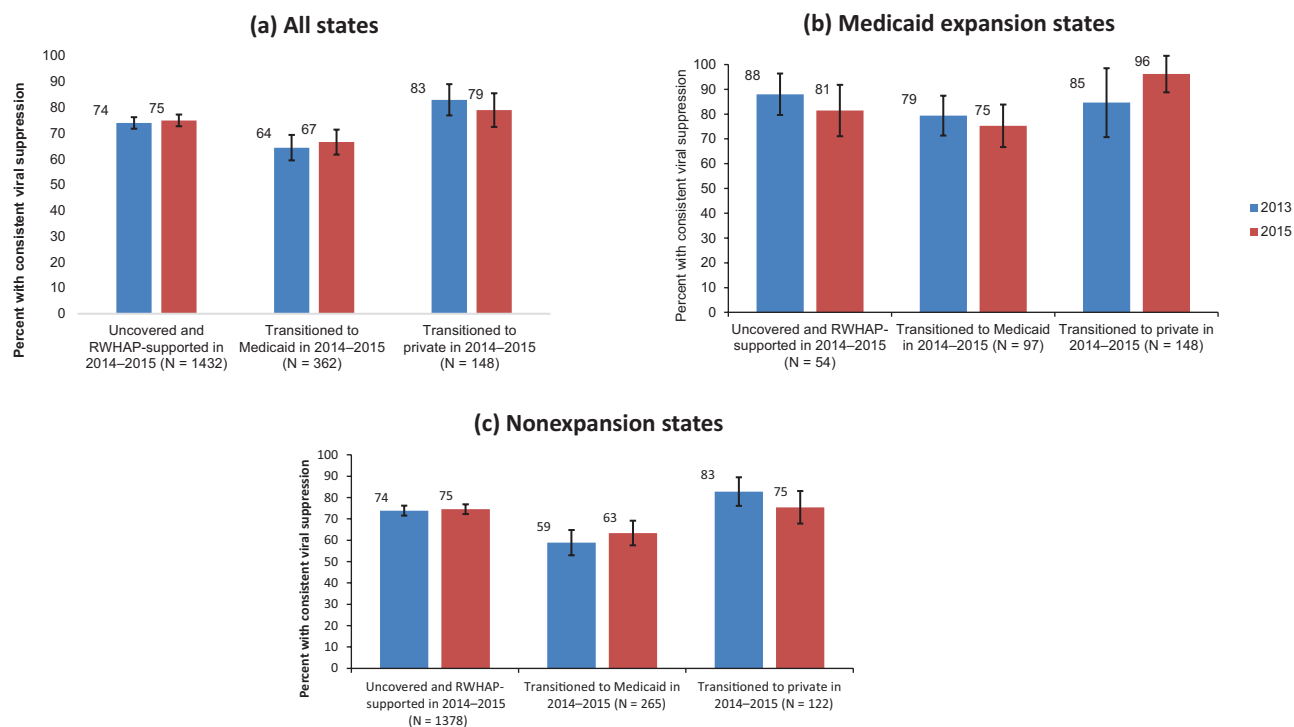


Figure 1. Consistent viral suppression by form of health care coverage overall and by state Medicaid expansion status. The figure depicts changes in consistent viral suppression between 2013 and 2015 among those with each type of insurance coverage in 2014–2015 overall and by state Medicaid expansion status. We defined consistent viral suppression as all human immunodeficiency virus viral load measurements within the calendar year being ≤ 200 copies per milliliter. Abbreviation: RWHAP, Ryan White HIV/AIDS Program.

In the multivariable analysis, the prevalence of consistent viral suppression in 2015 did not significantly differ among those who transitioned to Medicaid (aPR, 0.95 [0.87, 1.04]) or private insurance (aPR, 1.04 [0.95, 1.13]) relative to those who remained uncovered, RWHAP-supported (Table 1).

The results of the secondary analysis of the relationship between changes in health insurance coverage and changes in viral suppression stratified on Medicaid expansion status (Supplementary Table S5) were consistent with the main results except that switching to private insurance was associated with consistent viral suppression among the 26 participants in Medicaid expansion states who made this transition (aPR, 1.38 [1.15, 1.65]).

Table 1. Healthcare Coverage and Consistent Viral Load Suppression

Characteristic	n	Consistently Suppressed Viral Load	
		Adjusted Prevalence Ratio	95% Confidence Interval
Health care coverage			
Uncovered, RWHAP-supported	1432	Ref	...
Medicaid	362	0.95	0.87–1.04
Private	148	1.04	0.95–1.13
Consistent HIV viral suppression in 2013			
No	450	Ref	...
Yes	1492	1.90	1.72–2.10
Gender			
Female	528	Ref	...
Male	1395	1.02	0.95–1.09
Transgender	19	1.11	0.96–1.28
Race/ethnicity			
Non-Hispanic black	909	0.97	0.90–1.05
Non-Hispanic white	327	Ref	...
Hispanic	668	1.06	0.99–1.14
Other	38	1.08	0.93–1.25
Age group, years			
18–34	343	Ref	...
35–44	567	1.08	1.00–1.17
45–54	695	1.03	0.95–1.11
55–64	337	1.07	0.98–1.17
HIV risk			
Men who have sex with men	872	1.00	0.94–1.06
Injection drug user	137	1.08	0.97–1.19
Heterosexual	894	Ref	...
Unknown/other	39	0.75	0.58–0.97
HIVRN site			
Site 1–Medicaid expansion	82	Ref	...
Site 2–Medicaid expansion	95	1.09	0.93–1.27
Site 3–No Medicaid expansion	350	0.90	0.77–1.06
Site 4–No Medicaid expansion	1415	1.04	0.90–1.21

N = 1942. We also controlled for HIV Research Network clinical site but suppressed results per the cohort data use agreement. We defined consistent viral suppression as all HIV viral load measurements within the calendar year being ≤ 200 copies per milliliter. We estimated the relationship between insurance coverage and consistent viral suppression using a Poisson regression model with robust variance to approximate a log-binomial regression model, including all covariates listed in the table.

Abbreviations: HIV, human immunodeficiency virus; RWHAP, Ryan White HIV/AIDS Program.

DISCUSSION

We found that transitioning from being uncovered, RWHAP-supported in 2013 to being covered by Medicaid or by private insurance in 2014 and 2015 was not associated with a change in viral suppression in 2015 in the overall study population. Instead, there were preexisting differences in viral suppression in 2013 among PWH who remained uncovered, RWHAP-supported and those who transitioned to Medicaid or to private insurance, and these differences persisted in 2015.

One possible reason for the lack of an association between healthcare coverage transition and viral suppression is that different types of insurance coverage may not have differentially facilitated or impeded consistent medication access and adherence. A second possibility is that any new barriers associated with Medicaid or private insurance may have been overcome through ongoing RWHAP assistance such as covering co-pays. Nationwide, this form of RWHAP support is prevalent. More than 75% of 500 000 PWH who received some form of RWHAP support in 2017 had healthcare coverage.

Prior studies identified lower rates of viral suppression for Medicaid beneficiaries than for uncovered, RWHAP-supported PWH but could not distinguish whether the differences were primarily due to patient or provider factors or to the form of healthcare coverage [6, 7]. Our finding that differences predated and then persisted after transition indicates patient or provider factors may drive the association. Housing status, income, education, and active substance abuse are not available in our database but may be important factors [7, 8]. It is worth noting that those who gained Medicaid in nonexpansion states would have required a qualifying health condition and/or a reduction in income. Regardless, there was no association with Medicaid in either subgroup of states.

We consider the increased prevalence of viral suppression among those transitioning to private insurance in Medicaid expansion states an exploratory finding. The result is based on a small number of individuals, and we do not have reason to believe that private insurance (including marketplace) plans would be fundamentally different between expansion and nonexpansion states. It is notable that 2 prior studies in nonexpansion states found that enrollment in a private insurance plan with RWHAP support for premiums was associated with improved viral suppression compared to remaining uncovered with RWHAP [9, 10]. We are unaware of prior studies in expansion states, and we were unable to distinguish patients who transitioned to private insurance coverage with RWHAP support.

Our study is limited by having only 4 HIV care sites; however, the sites include the western, southern, and northeastern regions of the country. Another limitation is that persons consecutively engaged in care for 4 years may be more likely than the general population of PWH to maintain consistent viral suppression. We also lacked data on whether those who transitioned to Medicaid or private insurance continued to benefit from supplemental

RWHAP services and on which patients were eligible to transition but did not. Finally, because the RWHAP encourages qualifying PWH to enroll in private insurance, our population of uncovered, RWHAP-supported PWH was limited to those who could not do so or those who had not yet acted to enroll despite eligibility.

CONCLUSIONS

Patients who transitioned from being uncovered, RWHAP-supported in 2013 to having Medicaid or private insurance in 2014 did not have significant changes in HIV viral suppression in 2015. The comprehensive system of HIV care and treatment the RWHAP provides to uncovered PWH is effective support for maintaining viral suppression.

Supplementary Data

Supplementary materials are available at *Clinical Infectious Diseases* online. Consisting of data provided by the authors to benefit the reader, the posted materials are not copyedited and are the sole responsibility of the authors, so questions or comments should be addressed to the corresponding author.

Notes

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Potential conflicts of interest. R. M. reports grants from NIH during the conduct of the study and personal fees from Medscape, LLC, outside the submitted work. J. A. reports grants and personal fees from Gilead and

Viiv-GlaxoSmithKline, personal fees from Merck and Janssen, and grants from Bristol Myers Squibb outside the submitted work. K. A. reports grants from NIH during the conduct of the study and personal fees from Trio Health outside the submitted work. H. H. and L. W. C. work for the federal agency that funds and monitors implementation of the Ryan White HIV/AIDS Program. All other authors report no potential conflicts. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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